

10/714, 577.

CoFE

1103326-0525 DIV 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No: 7,056,921 B2

Issued: June 6, 2006

Patentees: Berg, et al.

Title of Invention: SUBSTITUTED CHROMAN DERIVATIVES

Certificate of Mailing Under 37 C.F.R.	
§ 1.8	
I hereby certify that this paper is being deposited with the United States Postal Service as first class mail on the date indicated below in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450	
Richard J. Sterner	35,372
Agent Name	PTO Reg. No.
<i>Richard J. Sterner</i>	June 14, 2006
Signature	Date of Signature

Certificate of Correction Branch
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Certificate
JUN 22 2006
of Correction

**REQUEST FOR CERTIFICATE OF CORRECTION OF PATENT
FOR PTO MISTAKE (37 C.F.R. §1.322(a)) and
FOR APPLICANT MISTAKE (37 C.F.R. §1.323)**

1. It is noted that printing errors appear in the referenced patent which are attributable to the Office or to the Patentees. The printing error attributable to Patentees was made inadvertently and with no deceptive intent. Correction thereof

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does not involve such changes in the patent as would constitute new matter or would require reexamination.

2. The location of the errors in the issued patent and the exact pages and line numbers where the errors are shown correctly in the application file are:

Column and Line Number of Issued Patent	Location in Application File Where the Error is Shown Correctly
Col. 43, line 8: "in" should read --m--.	Original claim 1.
Col. 43, line 22: Immediately following section b) and immediately preceding the definition of R ₅ , insert --wherein R ₆ is H, C ₁ -C ₆ alkyl or C ₃ -C ₆ cycloalkyl; R ₇ is H, C ₁ -C ₆ alkyl or C ₃ -C ₆ cycloalkyl; and R ₈ is C ₁ -C ₆ alkyl, C ₃ -C ₆ cycloalkyl, CF ₃ , NR ₆ R ₇ , or phenyl;--.	Original claim 1 and Preliminary Amendment, filed April 22, 2004, page 11.
Col. 43, line 49: "disorder where in the disorder is slected" should read --disorders wherein the disorder is selected--.	Original claim 13 and Examiner's Amendment, page 2 of the Notice of Allowability mailed January 12, 2006.
Col. 46, line 50: "R ₁ is H, C ₁ -C ₆ cycloalkyl" should read --R ₁ is H, C ₁ -C ₆ alkyl or C ₃ -C ₆ cycloalkyl--.	Original claim 30.

3. The second printing error listed in the table above is attributable to Patentees, and the other three listed errors are attributable to the Office. With regard to Patentees' error, the definitions of substituents R₆, R₇ and R₈ in claim 1 were inadvertently deleted in the April 29, 2005 Amendment and Response. In that document, many of the original definitions of substituent R₄ were deleted, in keeping with the scope of subject

matter elected by Patentees for prosecution in the divisional application. However, in keeping with the scope of elected subject matter and as acknowledged by the Examiner to be in accord with the limitations imposed by the restriction requirement, COR₈ was maintained as one of the optional substituents on the heterocyclic ring recited in part a) of the definition of R₄ in claim 1. However, although COR₈ was properly retained in claim 1, the definition of R₈ was inadvertently deleted. Furthermore, the definitions of substituents R₆ and R₇, also inadvertently deleted, should have been retained, since one of the definitions of what R₈ can be is NR₆R₇. Thus, claim 1 of the patent recites, as is appropriate, a substituent COR₈, but there is no definition in the claim of R₈. Again, support for the inadvertently deleted subject matter is found in original claim 1, as well as the specification as filed. Furthermore, it can be seen from the prosecution history of this application that there was never any issue raised that might have led Patentees to remove the subject matter in question.

This situation only came to the attention of Patentees and their agent subsequent to allowance of the application and payment of the issue fee. A telephone call was made to the Examiner shortly after this discovery. During the discussion, the Examiner acknowledged the justification for restoring the deleted subject matter and further indicated that the present course of action to rectify this situation was the appropriate one. Entry of this correction as part of the issued Certification of Correction is respectfully requested.

4. Patentees request correction of all of the printing errors by Certificate of Correction. Attached is a copy of Form PTO/SB/44 (also Form PTO-1050).

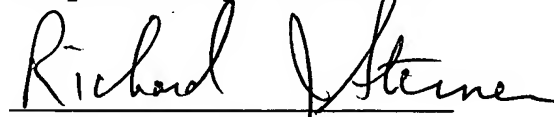
5. Please send the Certificate to the undersigned Agent.

6. In the interest of assisting the Office in considering and processing this Request, Patentees are providing herewith copies of the relevant pages of the application as filed and the subsequent communications to and from the Office referred to in the table above. The appropriate passages from these pages have been circled.

7. The Commissioner is hereby authorized to charge Deposit Account No. 23-1703 in the amount of One Hundred Dollars (\$100.00) to cover the fee required by 37 C.F.R. §1.20(a) in connection with this communication.

Dated: June 14, 2006

Respectfully submitted



Richard J. Sterner
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(212) 819-8783

Enclosures

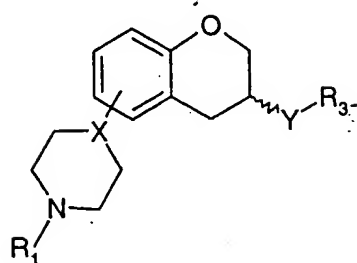
- 1) Pages 63, 64, 66 and 71 of application as filed, showing original claims 1, 13 and 30;
- 2) Pertinent part of Patentees' April 22, 2004 Preliminary Amendment;
- 3) Pertinent part of Notice of Allowability mailed January 12, 2006; and
- 4) Form PTO/SB/44 with requested corrections

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CLAIMS

1. A compound having the formula (I)



(I)

wherein

X is N or CH;

Y is NR_2CH_2 , CH_2NR_2 , NR_2CO , CONR_2 , NR_2SO_2 or NR_2CONR_2

wherein R_2 is H or $\text{C}_1\text{-C}_6$ alkyl;

R_1 is H, $\text{C}_1\text{-C}_6$ alkyl or $\text{C}_3\text{-C}_6$ cycloalkyl;

R_3 is $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl or $(\text{CH}_2)_n\text{-aryl}$,

wherein aryl is phenyl or a heteroaromatic ring containing one or two heteroatoms selected from N, O and S and which may be mono- or di-substituted with R_4 and/or

R_5 ;

wherein R_4 is H, $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl, halogen, CN, CF_3 , OH, $\text{C}_1\text{-C}_6$ alkoxy, NR_6R_7 , OCF_3 , SO_3CH_3 , SO_3CF_3 , $\text{SO}_2\text{NR}_6\text{R}_7$, phenyl, phenyl-

$\text{C}_1\text{-C}_6$ alkyl, phenoxy, $\text{C}_1\text{-C}_6$ alkylphenyl, an optionally substituted

heterocyclic ring containing one or two heteroatoms selected from N, O, S,

SO and SO_2 wherein the substituent(s) is(are) selected from $\text{C}_1\text{-C}_6$ alkyl,

$\text{C}_3\text{-C}_6$ cycloalkyl, phenyl- $\text{C}_1\text{-C}_6$ alkyl, $(\text{CH}_2)_m\text{OR}_9$ wherein m is 2-6 and

R_9 is H, $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl or phenyl- $\text{C}_1\text{-C}_6$ alkyl, and COR_8 ,

an optionally substituted heteroaromatic ring containing one or two

heteroatoms selected from N, O and S wherein the substituent(s) is(are)

selected from $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl and phenyl- $\text{C}_1\text{-C}_6$ alkyl, or

COR_8 ;

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wherein R_6 is H, C_1 - C_6 alkyl or C_3 - C_6 cycloalkyl;
 R_7 is H, C_1 - C_6 alkyl or C_3 - C_6 cycloalkyl; and
 R_8 is C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, CF_3 , NR_6R_7 , phenyl, a
heteroaromatic ring containing one or two heteroatoms selected from
N, O and S or a heterocyclic ring containing one or two heteroatoms
selected from N, O, S, SO and SO_2 ;

R_5 is H, OH, CF_3 , OCF_3 , halogen, C_1 - C_6 alkyl or C_1 - C_6 alkoxy;

and n is 0-4;

as (*R*)-enantiomers, (*S*)-enantiomers or a racemate in the form of a free base or a
pharmaceutically acceptable salt or solvate thereof.

2. A compound according to claim 1 wherein Y is NR_2CO or $CONR_2$.
3. A compound according to any one of claims 1-2 wherein X is N.
4. A compound according to any one of claims 1-3 wherein R_1 is H or C_1 - C_6 alkyl.
5. A compound according to any one of claims 1-4 wherein R_3 is $(CH_2)_n$ -aryl.
6. A compound according to any one of claims 1-4 wherein R_3 is $(CH_2)_n$ -aryl which is
substituted with R_4 , which is an optionally substituted heterocyclic or heteroaromatic
ring containing one or two heteroatoms selected from N, O and S, or COR_8 .
7. A compound according to any one of claims 5 and 6 wherein n is 0
8. A compound according to claim 6 wherein R_8 is NR_6R_7 or a heterocyclic ring
containing two heteroatoms selected from N and O.

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in the form of a free base or a pharmaceutically acceptable salt or solvate thereof optionally in association with diluents, excipients or inert carriers.

13. A pharmaceutical formulation according to claim 12 for use in the treatment of 5-hydroxytryptamine mediated disorders.

14. A pharmaceutical formulation according to any one of claims 12 or 13 for use in the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson's disease, thermoregulatory disorders, pain, hypertension, urinary incontinence or vasospasm; or for growth control of tumors.

15. A compound as defined in any of claims 1-11 for use in therapy.

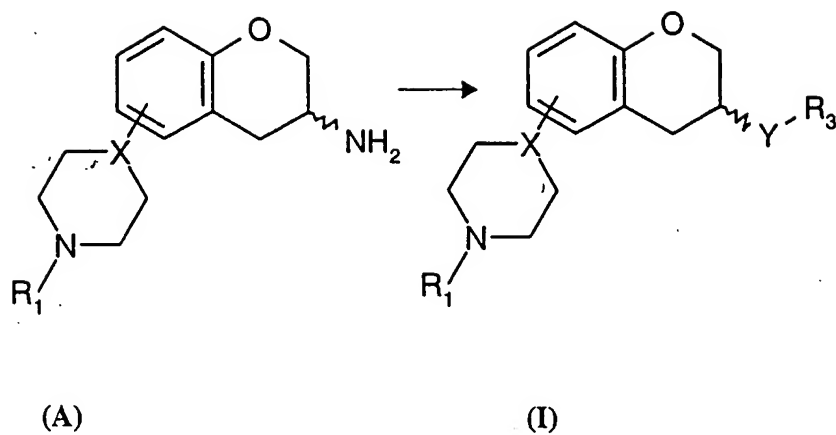
16. A compound as defined in claim 15 for use in the treatment of disorders in the central nervous system.

17. A compound as defined in claim 16 for use in the treatment of mood disorders, anxiety disorders, personality disorders, obesity, anorexia, bulimia, premenstrual syndrome, sexual disturbances, alcoholism, tobacco abuse, autism, attention deficit, hyperactivity disorder, migraine, memory disorders, pathological aggression, schizophrenia, endocrine disorders, stroke, dyskinesia, Parkinson's disease, thermoregulatory disorders, pain or hypertension.

18. A compound as defined in claim 15 for use in the treatment of urinary incontinence or vasospasm or for growth control of tumors.

19. A compound as defined in claim 15 for use in the treatment of 5-hydroxytryptamine mediated disorders.

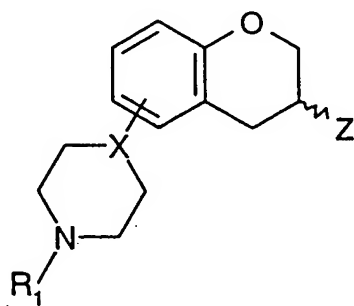
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with a suitable azide in the presence of carboxylic acid, $R_3\text{COOH}$.

30. A compound having the formula



10

wherein

$X = \text{N}$ or CH ;

$Z = \text{NH}_2$ or COOH ;

R_1 is H , $\text{C}_1\text{-C}_6$ alkyl or $\text{C}_3\text{-C}_6$ cycloalkyl.

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1103326-0525

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Berg, et al.
Serial No. : 10/714,577
Filed : November 13, 2003
Examiner : To be assigned
Group Art Unit : To be assigned
For : SUBSTITUTED CHROMAN DERIVATIVES

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to : Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on April 22, 2004.

Richard J. Steiner 35,372
Agent Name PTO Reg. No.
Richard J. Steiner April 22, 2004
Signature Date of Signature

MAIL STOP NON-FEE AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

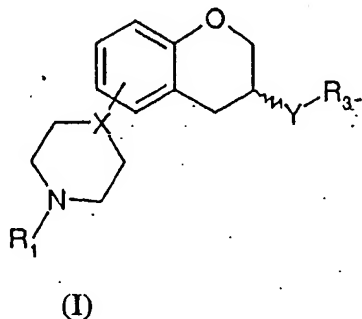
Sir:

Preliminary to examination on the merits, please amend the application as follows:

In the claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A compound having ~~the~~ of formula (I)



wherein

X is N ~~or~~ CH;

Y is ~~NR₂CH₂~~, CH₂NR₂, NR₂CO, CONR₂, NR₂SO₂ or NR₂CONR₂

wherein R₂ is H or C₁-C₆ alkyl;

R₁ is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl;

R₃ is ~~C₁-C₆ alkyl, C₃-C₆ cycloalkyl or (CH₂)_n-aryl,~~

~~wherein aryl is phenyl or a heteroaromatic ring~~

~~containing one or two heteroatoms selected from N, O and~~

~~S and which (CH₂)_n-phenyl, wherein the phenyl may be~~

~~mono- or di-substituted with R₄ and/or R₅;~~

wherein R₄ is selected from

a) H,

b) C₁-C₆ alkyl,

c) C₃-C₆ cycloalkyl,

- d) halogen,
- e) CN,
- f) CF₃,
- g) OH,
- h) C₁-C₆ alkoxy,
- i) NR₆R₇,
- j) OCF₃,
- k) SO₃CH₃,
- l) SO₃CF₃,
- m) SO₂NR₆R₇,
- n) phenyl,
- o) phenyl-C₁-C₆ alkyl,
- p) phenoxy,
- q) C₁-C₆ alkylphenyl,

r) an optionally substituted 5-, 6- or 7-membered heterocyclic ring containing one or two heteroatoms selected from N, O, S, SO and SO₂, wherein when the heterocyclic ring is 5- or 6-membered and contains one heteroatom, the heteroatom is not N and when the heterocyclic ring is 5- or 6-membered and contains two heteroatoms, the heteroatoms are not both N and wherein the substituent(s) is(are) selected from C₁-C₆ alkyl, C₃-C₆ cycloalkyl, phenyl-C₁-C₆ alkyl, (CH₂)_mOR₉ wherein m is 2-6 and R₉ is H,

C₁-C₆ alkyl, C₃-C₆ cycloalkyl or phenyl-C₁-C₆ alkyl,
and COR₈,

s) an optionally substituted 5- or 6-membered
heteroaromatic ring containing one or two
heteroatoms selected from N, O and S, wherein when
the heteroaromatic ring contains one heteroatom,
the heteroatom is not N and when the heteroaromatic
ring contains two heteroatoms, the heteratoms are
not both N and wherein the substituent(s) is(are)
selected from C₁-C₆ alkyl, C₃-C₆ cycloalkyl and
phenyl-C₁-C₆ alkyl, ~~or~~ and

t) COR₈;

wherein R₆ is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl; R₇
is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl; and R₈ is C₁-C₆
alkyl, C₃-C₆ cycloalkyl, CF₃, NR₆R₇, or phenyl, ~~a~~
~~heteroaromatic ring containing one or two~~
~~heteroatoms selected from N, O and S or a~~
~~heterocyclic ring containing one or two heteroatoms~~
~~selected from N, O, S, SO and SO₂;~~

R₅ is selected from H, OH, CF₃, OCF₃, halogen, C₁-C₆
alkyl ~~or~~ and C₁-C₆ alkoxy;

and n is 0-4;

as wherein the compound is an (R)-enantiomer, an (S)-



Application No. 10/714,577	Applicant(s) BERG ET AL.	
	Examiner Rita J. Desai	Art Unit 1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/22/05.
2. ☒ The allowed claim(s) is/are 1, 2, 4, 7, 9, 10, 12, 13, 27, 29 and 30.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/171570.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Art Unit: 1625

The request filed on 9/25/05 for a Continued Examination Application (RCE) under 37 CFR 1.114 based on parent Application No. 10/714,577 is acceptable and a RCE has been established. An action on the RCE follows.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Sterner on 12/22/05 .

The application has been amended as follows:

In claim 13 and 27 after the term 5-hydroxytryptamine-mediated disorder
Insert -- wherein the disorder is selected from anxiety and depression, --.

In claims 29

Cancel the whole paragraph A(iii) which is.

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,056, ⁹²¹~~775~~ B2
APPLICATION NO.: 10/714,577
ISSUE DATE : June 6, 2006
INVENTOR(S) : Berg, et al.

Page 1 of 1

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Col. 43, line 8: "in" should read
--m--.

Col. 43, line 22:
Immediately following section b) and immediately preceding the definition of R₅, insert --wherein R₆ is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl; R₇ is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl; and R₈ is C₁-C₆ alkyl, C₃-C₆ cycloalkyl, CF₃, NR₆R₇, or phenyl;--.

Col. 43, line 49: "disorder where in the disorder is slected" should read
--disorders wherein the disorder is selected--.

Col. 46, line 50: "R₁ is H, C₁-C₆ cycloalkyl" should read --R₁ is H, C₁-C₆ alkyl or C₃-C₆ cycloalkyl--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

JUN 23 2006